

REMARKS

Currently, claims 1-7, 9-16, 19, 21-26, 30-32, and 48-62 are pending in the present application, including independent claims 1, 23, and 48. In the Office Action, independent claims 1, 23, and 48 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either U.S. Patent No. 5,427,696 or 5,510,000 to Phan, et al. and U.S. Patent No. 3,844,880 to Meisel, et al., optionally with U.S. Patent No. 5,437,766 to Van Phan, et al.

However, none of these references, either alone or in combination, recognize the ability to decrease the amount of slough as required by independent claims 1, 23, and 48. The method of independent claim 1, which requires applying a imidazoline quaternary compound and, thereafter, a latex, leads to higher latex retention percentages on the fibers used of the resulting tissue product. Applicants' specification points out that controlling the latex retention percentages to make such percentages higher leads to better inhibition of the production of slough from the web. Pg. 21-22. Thus, retaining the latex on the cellulosic fibers leads to the latex forming a flexible bond with the cellulosic fibers such that a resulting web is flexible and strong, while also producing low amounts of lint and slough (by way of example, amounts of slough that are at least 10% less than amounts generated by otherwise identical tissue products made without the addition of Applicants' claimed latex). (Appl. at page 4).

For example, referring to Example 2 of the presently application, the retention of latex applied to six fibers furnish samples were compared. To each sample, an imidazoline quaternary debonder, an anionic styrene-butadiene latex, and a polyacrylamide temporary wet strength agent (which also serves as a dry strength agent) were added. However, the sequence of addition of each additive was varied. The results of each test is shown in Table 2, which is reproduced below:

Table 2: Sample Results

Sample	1st Addition	2nd Addition	3rd Addition	Turbidity	Retention %
1	Debonder	Latex	Strength Agent	38	81
2	Latex	Debonder	Strength Agent	86	45

3	Strength Agent	Debonder	Latex	51	71
4	Debonder	Strength Agent	Latex	37	82
5	Latex	Strength Agent	Debonder	66	60
6	Strength Agent	Latex	Debonder	67	59

As shown, the sequence of chemical addition can have an effect on latex retention. When the imidazoline quaternary debonder is applied prior to the latex (as in samples 1, 3, and 4), the percent retention of the latex is higher (81%, 71%, and 82%, respectively) than the percent retention of the latex when the imidazoline quaternary debonder is applied after the latex (as in samples 2, 5, and 6 having 45%, 60% and 59% retention, respectively).

Additionally, the ability to incorporate latex into a fibrous furnish was demonstrated by the present application in Example 6. Four samples of a fibrous furnish (volume of 909 ml and weight of 3 grams) were prepared. Thereafter, an anionic styrene-butadiene latex (available from Dow Chemical under the trade designation "DL-239"), having a solids content of 0.5% by weight of solution, was applied to each sample of the fibrous furnish in an amount of 20 lb/T. In addition, "Prosoft TQ-1003", "Arosurf PA 727", Varisoft We-16", and "Varisoft 137" were applied respectively to Samples 1-4, each in an amount of 16.5 lb/T. "Kymene 557 LX", a polyamide epichlorohydrin permanent wet strength agent, was also applied to the furnish in amount of 8.5 lb/T. The sequence of application for these additives was debonder, strength agent, and then the latex. A 5-minute interval existed between the application of each additive. The results are provided in Table 6.

Table 6: Sample Results

Sample	Debonder	Turbidity	Retention %
1	Prosoft TQ-1003 (imidazoline quaternary)	20	94
2	Arosurf PA 727 (diamidoamine quaternary)	34	84
3	Varisoft we-16 (quaternized fatty acid trialkanolamine ester debonder)	24	91

4	Varisoft 137 (dialkyldimethyl quaternary)	41	78
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As shown, the imadazoline quaternary debonder provided the lowest turbidity coefficients and the highest retention rate.

Applicants respectfully submit that the present claims patentably define over all of the prior art of record for at least the reasons set forth above. As such, it is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Should any issues remain after consideration of this Amendment, Examiner Fortuna is invited and encouraged to telephone the undersigned.

Please charge any additional fees required by this Response to Deposit Account No. 04-1403.

Respectfully requested,
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